

Commonwealth of Kentucky
Division for Air Quality
PERMIT STATEMENT OF BASIS

Title V, Construction / Operating

Permit: V-08-006

Owensboro Grain Company LLC

Owensboro, KY 42302

August 18, 2008

Permit Writer, Reviewer, Chris Leslie

SOURCE ID: 21-059-00039

AGENCY INTEREST: 938

ACTIVITY: APE20050004

SOURCE DESCRIPTION:

Owensboro Grain Company, Inc. is a grain processing plant which produces crude vegetable oil. The source uses Hexane to strip off the crude oil from the meal of the grain. The meal is sold after the oil has been removed and the oil is sent elsewhere to be refined into table oils, margarine, and other edible fats and oils.

Initial Permit – The initial permit, O-79-301, was issued to the source on June 29, 1979 for the operation of a grain handling and soybean processing plant.

C-81-70 – This permit was issued on August 24, 1981. The permit is for the expansion of the operations, the addition of a coal fired boiler, and the addition of a soybean oil extraction plant.

O-82-210 – This permit was issued on August 22, 1982. The permit is a renewal for O-79-301.

O-83-137 – This permit was issued on July 16, 1983. The permit is for the operation of the entire source, including the new boiler.

C-84-173 – This permit was issued on October 18, 1984. The permit is for the addition of a grain dryer and soybean cleaning process unit.

O-87-01 – This permit was issued on February 3, 1987. The permit is an operating permit and includes all the equipment constructed with permit C-81-70.

C-87-049 – This permit was issued on May 7, 1987. The permit is for the reconstruction and addition of processing equipment and a production rate increase.

C-89-029 – This permit was issued on February 24, 1989. The permit is for the replacement of a barge unloading facility.

C-92-103 – This permit was issued on August 13, 1992. The permit is for the addition of a barge loadout and conveying system.

S-95-092 – This permit was issued on May 15, 1995. The permit is for the addition and operation of a soybean cleaning system.

S-96-229 – This permit was issued on August 9, 1996. The permit is for the addition of conveyors, elevator legs, soybean storage tanks and four soybean/meal storage tanks.

S-97-030 – This permit was issued on April 3, 1997. The permit is for the addition of a soybean meal storage tank.

Letter 1 – The source was issued a letter on July 6, 2000 for the installation of an enclosed conveyor to replace existing equipment. A determination was made that State Regulation 63:010, Fugitive emissions applied to the conveyor. A No Permit Required letter was sent to the source. The log number for this action is I-1910.

An application was received on October 6, 2005, and the company wants to construct a new storage bin with cyclone, two elevator legs and a truck loadout system that is baghouse controlled, they also want to change the company and source name to Owensboro Grain Company LLC

An application was received on August 6, 2007. The existing coal-fired boiler has been experiencing cracking around tube holes in the steam drum, resulting in the plant shutting down for repairs. They are planning to replace the drum with an identical unit. The boiler drum replacement was reviewed for applicability of PSD. This is viewed as a modification as the boiler drum replacement is a physical change. The company has used 2005 and 2006 emissions to calculate the past actual emissions. The past actual emissions for SO₂ were submitted as 550.9295 tons/yr. The company has also submitted the projected actual emissions. The projected emissions for SO₂ were submitted as 590.187 tons/yr. The emissions increase was calculated using actual vs. projected actual method. The increases of all the criteria pollutants are less than the respective significant emission levels. However the emission increase for SO₂ was projected to be 39.257 tons/yr. This increase is less than the 40 tons/yr of significant emission level under the PSD regulations. However, pursuant to 401 KAR 51:017, Section 16(5)(a), there is a reasonable possibility that this project that is not part of a major modification may result in significant emissions increase for SO₂. The monitoring and recordkeeping requirements under 401 KAR 51:017, Section 16 will apply. The permit is modified to include these monitoring and recordkeeping requirements to show that the SO₂ emissions will not go above 40 tons/yr. The significant levels are 40 tons for SO₂ and NO_x; 15 tons for PM₁₀; 25 tons for PM; and 100 tons for CO. The source is also proposing the addition of a second backup boiler (natural gas fired) rated at 158 mmBtu to be used for emergency backup.

COMMENTS

Type of control and efficiency

The controls implemented at the source are considered adequate to sufficiently control emissions. The assumed control efficiency for the points listed under 401 KAR 63:010, Fugitive emissions, is 90% and are controlled by water sprays or enclosure. The points listed under 401 KAR 60:005, Standards of performance for new stationary sources, which incorporates by reference 40 CFR 60.250 (40 CFR 60 Subpart Y), are enclosed and are assumed to have a control efficiency of 90%. The points listed under 401 KAR 59:010, New process operations, are controlled by either a cyclone or a fabric filter with control efficiencies at or near 99%. The points listed under 401 KAR 61:020, Existing process operations, are controlled by a fabric filter with control efficiencies at or near 99%. The boiler listed under 401 KAR 59:015, New indirect heat exchangers, is controlled by a fabric filter with a control efficiency of 99.9%. The points listed under 401 KAR 63:020, Potentially hazardous matter or toxic substances, have no control equipment, but there is a MACT standard limit of 0.2 gallons of hexane loss per ton of oilseeds crushed. The new boiler listed under 401 KAR

59:015 and 401 KAR 60:005, incorporating by reference 40 CFR 60 Subpart Db, Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units, applicable to an emission unit with a heat input capacity of greater than 100 mmBtu/hr and commences construction, modification, or reconstruction after June 19, 1984, is equipped with flue-gas recirculation and a low NO_x burner to insure that both NO_x and SO₂ can never exceed the limit of 36 tons/yr, for each pollutant.

Emission factors and their source

AP-42

MSDS

Manufacturer's guarantees

Applicable regulations

401 KAR 51:017, Prevention of significant deterioration of air quality, applies to the source because the source emits more than 250 tons/year of VOC, SO₂, and NO_x and has undergone PSD review in 1981.

401 KAR 52:020, Title V Permits, applies to the source because the source emits more than 10 tons/year of a single HAP (n-Hexane) and more than 100 tons/year of SO₂, NO_x and VOC.

401 KAR 59:010, New process operations, applies to the source because there is equipment controlled by cyclones and fabric filters which commenced construction after July 2, 1975.

401 KAR 61:020, Existing process operations, applies to the source because there is equipment controlled by fabric filters which were constructed prior to July 2, 1975.

401 KAR 63:010, Fugitive emissions, applies to the source because there is equipment that releases fugitive emissions.

40 CFR 60 Subpart DD – Standards of Performance for Grain Elevators, applies because the source handles and stores grain.

401 KAR 60:005, Standards of performance for new stationary sources, which incorporates by reference 40 CFR 60.250 (40 CFR Subpart Y), applies because the source handles and crushes coal.

401 KAR 59:015, New indirect heat exchangers, applies because of the boilers.

40 CFR 63 Subpart GGGG – National Emission Standards for Hazardous Air Pollutants: Solvent Extraction for Vegetable Oil Production, applies because the source produces crude vegetable oils.

401 KAR 60:005, incorporating by reference 40 CFR 60 Subpart Db, Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units, applicable to an emission unit with a heat input capacity of greater than 100 mmBtu/hr and commences construction, modification, or reconstruction after June 19, 1984.

EMISSION AND OPERATING CAPS DESCRIPTION:

The equipment listed under State Regulation 401 KAR 59:010, New process operations, applicable on or after July 2, 1975, have an opacity and mass emission limits resulting from the application of this regulation. As a result, the equipment controlled by 401 KAR 59:010, New process operations, will be required to use a filter or cyclone and be operated and maintained in accordance with the manufacturer's recommendations. Regulation 40 CFR 60, Subpart DD – Standards of Performance for Grain Elevators, also has opacity and emission standards.

The equipment listed under State Regulation 401 KAR 61:020, Existing process operations, applicable prior to July 2, 1975, have an opacity and mass emission limits resulting from the application of this regulation. As a result, the equipment controlled by 401 KAR 61:020, Existing process operations, will be required to use a filter and be operated and maintained in accordance with the manufacturer's recommendations. Regulation 40 CFR 60, Subpart DD – Standards of Performance for Grain Elevators, also has opacity and emission standards.

The equipment listed under State Regulation 401 KAR 63:010, Fugitive emissions, will be controlled, by utilizing wet suppression, enclosures, and/or dust collection equipment so as to keep particulate emissions from crossing the lot line of the property. Regulation 40 CFR 60, Subpart DD – Standards of Performance for Grain Elevators, also has opacity standards.

The equipment listed under State Regulation 401 KAR 60:005, Standards of performance for new stationary sources, which incorporates by reference 40 CFR 60.250 (40 CFR Subpart Y), have an opacity limit resulting from the application of this regulation. The source also has a limit of 47,000 tons of coal processed in any 12 month period.

The equipment listed under State Regulation 401 KAR 59:015, New indirect heat exchangers, has emission limits on particulate matter, opacity, and, sulfur dioxide. The coal burned in the coal-fired boiler shall not exceed 1.0 % sulfur by weight.

The equipment listed under 401 KAR 60:005, incorporating by reference 40 CFR 60 Subpart Db, Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units, has emission limits on nitrogen oxides, but the source has ensured these limits can never be exceeded. This new boiler utilizes flue gas recirculation and a low NOx burner to ensure emissions of NOx do not trigger PSD requirements and regulatory limits.

40 CFR 63, Subpart GGGG – National Emission Standards for Hazardous Air Pollutants: Solvent Extraction for Vegetable Oil Production, limits the source to 0.2 gallons of hexane loss per ton of grain crushed. By Amended Agreed Order, issued by this Division on March 26, 1998, the source is limited to not emitting more than 1092.90 tons of hexane per year.

The equipment listed under State Regulation 401 KAR 63:020, Potentially hazardous matter or toxic substances, limits the source to emitting potentially hazardous matter or toxic substances in such quantities or duration as to not be harmful to the health and welfare of humans, animals and plants.

PERIODIC MONITORING:

Given the control devices used (fabric filters and cyclones) at the plant, there is little chance of violating a mass or opacity standard. For this reason, direct measurement of mass and opacity emissions will not be required but some assurance that the fabric filters and cyclones are working properly will be needed. Visual inspection of the fabric filters and cyclones, proper maintenance, and records of the maintenance and the dates this maintenance occurred are sufficient to assure the fabric filters and cyclones are working properly.

Within 90 days of achieving maximum load, but no later than 180 days after installation, opacity measurements utilizing Method 9 and stack emissions testing utilizing Methods 5 and 7 or other approved testing will have to be conducted on the new backup boiler to assure compliance after startup.

Record keeping is also required to demonstrate compliance with the applicable limitations in the permit.

OPERATIONAL FLEXIBILITY:

The source has been limited to burning no more than 47,000 tons of coal per year. By Amended Agreed Order, issued by this Division on March 26, 1998, the source is limited to not emitting more than 1092.90 tons of Hexane per year. A MACT standard also limits the source to 0.2 gallons of Hexane lost per ton of grain crushed. Monthly records to demonstrate compliance with these limitations shall be maintained monthly and on a 12 month rolling average.

CREDIBLE EVIDENCE:

This permit contains provisions which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has not incorporated these provisions in its air quality regulations.